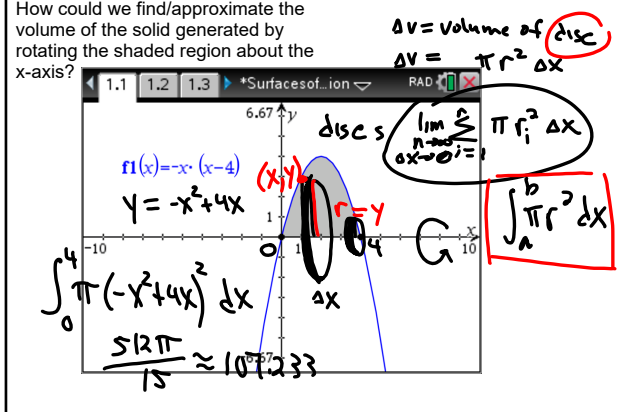
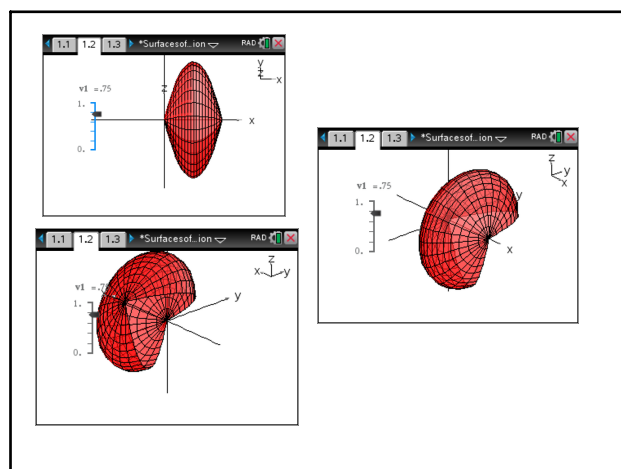


7.3a Volumes

How could we find/approximate the volume of the solid generated by rotating the shaded region about the x-axis?



Dec 15-5:19 PM



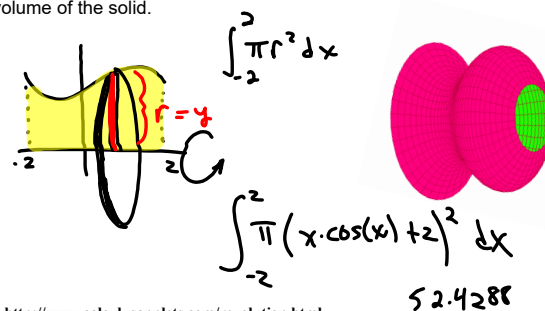
Dec 7-9:03 AM

Volumes of known cross section

$$V = \int_a^b A(x) dx$$

$A(x) = \text{area of a slice}$

The region between the graph of $f(x) = x \cos(x) + 2$ and the x-axis over the interval $[-2, 2]$ is revolved about the x-axis to generate a solid. Find the volume of the solid.

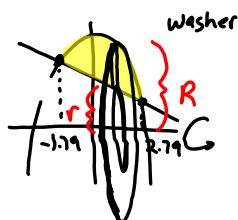


<http://www.calculusapplets.com/revolution.html>

Dec 15-6:07 PM

Dec 15-6:11 PM

Find the volume of the object generated by revolving $y = 9 - x^2$ and $y = 4 - x$ about the x-axis.



$$R = 9 - x^2 \quad r = 4 - x$$

<http://www.calculusapplets.com/revolution.html>

$$\Delta v = (\pi R^2 - \pi r^2) \Delta x$$

$$V = \int \pi R^2 - \pi r^2 dx$$

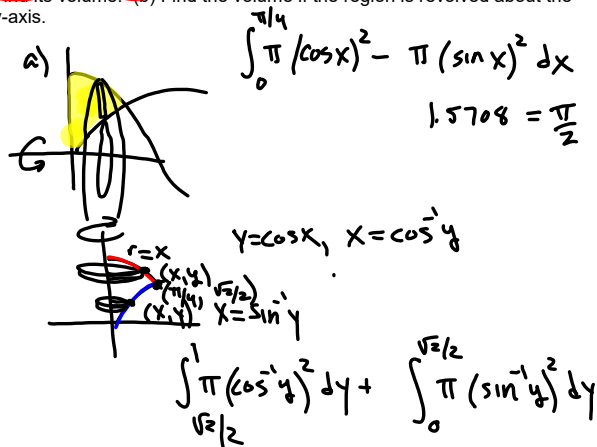
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$$\int_{-1.79}^{2.79} \pi (9 - x^2)^2 - \pi (4 - x)^2 dx$$

$$= 564.346$$

Dec 15-6:12 PM

The region in the first quadrant enclosed by the y-axis and the graphs of $y = \cos(x)$ and $y = \sin(x)$ is revolved about the x-axis to form a solid. (a) Find its volume. (b) Find the volume if the region is revolved about the y-axis.



Dec 15-6:53 PM